

# CQ Researcher

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## Arts Education

*Does arts training improve social and academic skills?*

Arts education faces serious challenges, even as teachers and business leaders recognize its value to students as never before. A growing body of research suggests that the arts offer students a unique, valuable way to grow intellectually, socially and emotionally. Some researchers suggest high-quality arts education helps improve test scores and reduce tardiness and truancy. Others argue that even without such benefits, the arts are inherently good because they help children grow into creative, problem-solving adults with skills necessary for the 21st-century economy. But arts education — on the decline for more than two decades — is now threatened by shrinking school budgets and a narrowing of the curriculum because of federal and state testing and accountability mandates. Meanwhile, a small but growing number of schools are integrating the arts into academic courses and using the arts to help students overcome learning disabilities.



*A proud artist shows off her artwork at Inner-City Arts, which provides a wide range of arts activities — during school hours and after school — at a modern campus in the heart of Los Angeles' Skid Row neighborhood.*

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Cover: Inner-City Arts

# Arts Education

BY BETH BAKER

## THE ISSUES

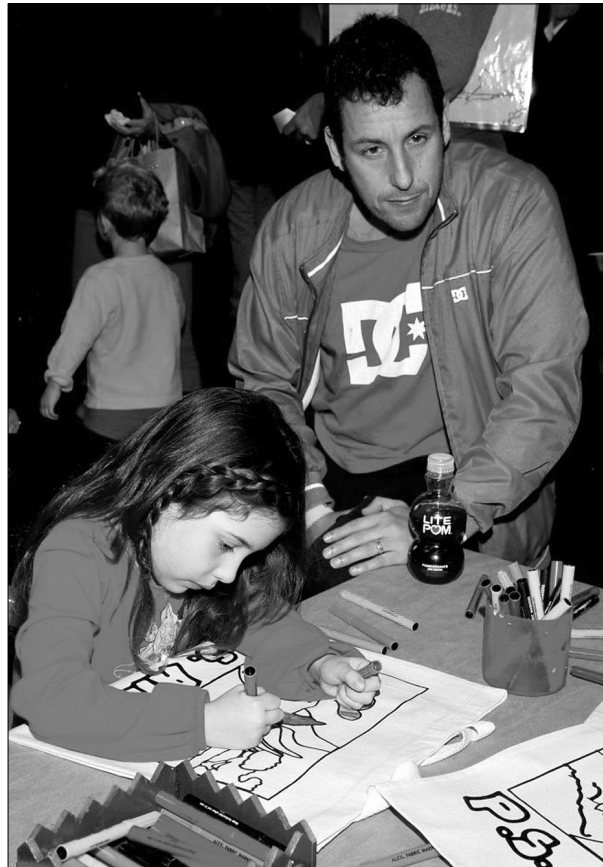
Two dozen kindergartners hop, skip, jump and gallop to the beating of a drum at Joe's Movement Emporium, a dance studio in Mount Rainier, Md. A petite instructor leading the controlled chaos gently exhorts the children to turn their bodies into straight lines or curvy shapes, which most do with gusto.

The youngsters, students at Mount Rainier Elementary School, participate in the program thanks to principal Janet Reed's passionate commitment to the arts. Without the grants Reed raises from government and philanthropic sources, her students would lack almost all arts instruction, except for music.

"All of the research shows the arts advance academic excellence," Reed says. But providing arts education isn't easy for schools to do, she says. "It comes down to money."

Indeed, many educators and researchers argue that the arts, whether music, dance, drama or visual arts, enhance learning and foster critical-thinking skills.

"The research shows there are many direct benefits from all of the art forms, in different ways," says Sandra Ruppert, executive director of the Arts Education Partnership, a coalition of education, arts, government, business and philanthropic organizations. "In music we see a lot of connections between studying keyboards and understanding mathematical concepts. We see drama as a way to help early readers develop their comprehension skills. When they have



Actor Adam Sandler and his daughter, along with scores of other celebrities, attend a fundraiser in Santa Monica, Calif., last November for PS Arts, a 20-year-old program that brings arts education to underserved schools and their communities and offers arts-related workshops for classroom teachers.

P.S. Arts

an opportunity to act out the story, they gain a greater comprehension in reading."

Still, the strength of the link between arts education and academic achievement remains an open question. Ellen Winner, a psychology professor at Boston College who specializes in arts-education research, says that while "studies are showing kids who take a lot of arts are also doing well in school," a variety of factors may explain why. For example, she says, some students "come from families who want them to achieve." And some "go to schools that are strong in both" arts and core subjects like math and reading.

Whether or not the arts translate directly into higher academic achievement, many educators and parents see an inherent value in arts training. For example:

- Ninety-three percent of respondents to a public opinion survey said the arts are vital to a well-rounded education.<sup>1</sup>

- A third of K-12 parents said schools placed "too little emphasis" on art and music, while 61 percent said the "right amount" was placed on those subjects; only 5 percent said they received "too much emphasis."<sup>2</sup>

- Ninety-five percent of Americans said they considered music part of a well-rounded education, and 79 percent said music education should be mandatory.<sup>3</sup>

"The arts are absolutely crucial because these are the subjects and activities that bring children to school," says Diane Ravitch, research professor of education at New York University. "They're highly motivating, and they expand

students' ability to think and feel and get connected to other students."

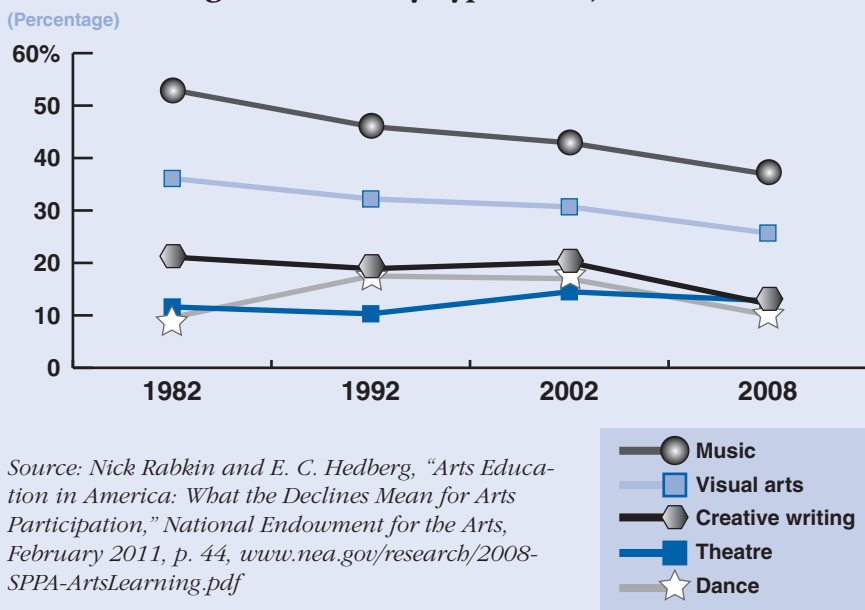
Yet schools are struggling to maintain arts programs in the face of eroding school budgets and government mandates to concentrate on raising math and reading test scores.

"Back in the old days, [school administrators] had more latitude to be more supportive of programs like art and music, and science even, that are not part of reading and math," says Daniel A. Domenech, executive director of the American Association of School Administrators. "School districts cannot run on a deficit like our government. So it's their obligation to be financially responsible, and if they don't

## Childhood Arts Education Declined

The percentages of 18-year-olds who received childhood education in music, visual arts and creative writing — the most popular forms of arts education — dropped significantly from 1982 to 2008. Levels for theater and dance education remained largely unchanged.

**Percentage of 18-Year-Olds Who Received Arts Education During Childhood By Type of Art, 1982-2008**



have the money, they don't have the money."

In Westerville, Ohio, school officials recently cut back arts education, among other programs, as they struggled to deal with a \$23 million budget deficit in the school system. On March 6, voters supported a special property-tax levy, by a 51%-49% margin, that will restore \$8 million in funding for arts classes, athletics, band, remedial reading and gifted classes. A similar levy was defeated in November.<sup>4</sup>

While arts education is widely viewed as important, data are hard to come by. School districts are not required to report to the federal government the status of their arts education programs.

"There's very little national-level research on the status and condition of arts education," says Narric W. Rome,

senior director for federal affairs and arts education at Americans for the Arts, an advocacy organization based in Washington. Results of the last federal survey on access to arts education came out in 2002, and data from a new survey are expected in April. But even that survey will not include key information, such as how many students have access to arts classes, says Rome.

The President's Committee on the Arts and the Humanities, which advises the White House on cultural issues, in 2011 found "a complex patchwork" of arts programs, "with pockets of visionary activity flourishing in some locations and inequities in access to arts education increasing in others."<sup>5</sup> Other studies have found that cuts in arts education have disproportionately affected African-American and Latino youngsters.

Advocates argue that rather than cutting exposure to the arts, students should have contact with the field in multiple ways. "The richest experiences for children are ones where you have an arts specialist who isn't just teaching kids in isolation but who acts as a coach or mentor to a classroom teacher," Ruppert says. Children also learn from visiting artists who expose them to professional-level work.

Education professor Mariale Hardiman, chair of the Department of Interdisciplinary Studies at Johns Hopkins University, is exploring whether teaching other subjects through the arts can improve memory and comprehension. In a randomized, controlled experiment at a low-income school in Baltimore, Hardiman hopes to learn if art can improve fifth-graders' understanding of astronomy and ecology. Art is "a way to improve pedagogy and give kids the opportunity to manipulate information and have more fun with it," she says.

Learning art — whether by making pottery, playing an instrument or choreographing a dance — encourages open-ended inquiry, proponents say. "The arts teach children that problems can have more than one solution and that questions can have more than one answer," writes Elliot W. Eisner, a professor emeritus of art at Stanford University.<sup>6</sup>

At the same time, advocates say, the arts can require discipline and set a high bar for excellence. "There are so many benefits," says Michael Blakeslee, deputy executive director of the National Association for Music Education. "One is the idea of learning something in depth and sticking to it and going for perfection. If children take a math test and get 85 percent, they think they did well. If they go to a concert and play 85 percent of the notes right, they don't think they did so well."

Moreover, children simply enjoy participating in the arts — which may be

one of art's greatest strengths. "When there's strong emotional content to the learning — when it's fun or engaging or gratifying — it's more likely to take hold," says Lois Hetland, an associate professor of art education at the Massachusetts College of Art in Boston. "It gets tied into memory. Being engaged is a critical factor in learning."

As educators, researchers, arts specialists and school-reform advocates debate the merits of arts education, here are some of the questions being asked:

**Does arts education improve academic performance?**

Speaking in 2010 at a conference of the Arts Education Partnership, Education Secretary Arne Duncan said the arts teach students teamwork and help them "practice collaborative learning with their peers.

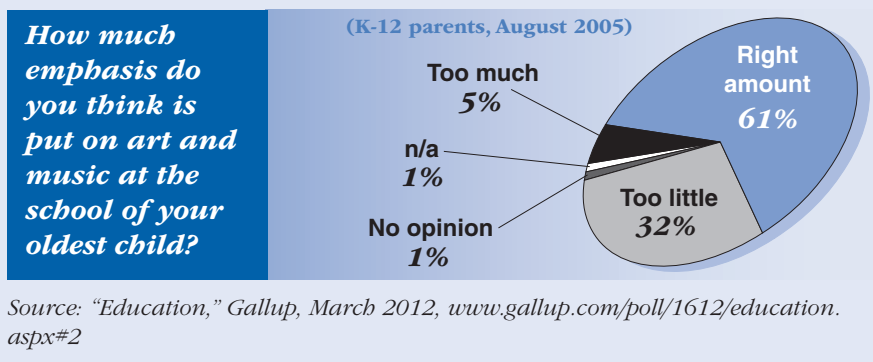
"They develop skills and judgment they didn't know they had — whether it is drumming in time or acquiring the knowledge to differentiate between Pavarotti and the tenor in the choir loft at the Sunday service," he said.<sup>7</sup>

For decades, arts education advocates have been amassing evidence aimed at convincing education policymakers and school superintendents that the arts should be a basic part of the curriculum for every child. Hundreds of studies suggest the arts contribute to cognitive and academic improvement, though the extent to which that may be true remains a matter of debate within the education field.

Perhaps the most famous study — and one that is still being debated — suggested there is a "Mozart effect" on learning for those who listen to classical music. In a 1993 experiment, college students performed better on a test for spatial reasoning after listening for 10 minutes to a Mozart sonata. The effect lasted only 15 minutes.<sup>8</sup> But the experiment, which others have tried to replicate with mixed results, sparked intense public interest, even prompting Democratic Gov. Zell Miller

**Most Parents Say 'Right' Emphasis Put on Arts**

*More than 60 percent of parents say schools place the right amount of emphasis on art and music, while nearly a third say the arts get too little weight. Only 5 percent say schools place too much importance on the arts.*



of Georgia to include the cost of a classical music CD for every baby born in the state in his 1998 budget.

A promising new avenue of research comes from neuroscience, using brain imaging to delve into how the arts might affect learning in other realms. "Is it simply that smart people are drawn to 'do' art — to study and perform music, dance, drama — or does early arts training cause changes in the brain that enhance other important aspects of cognition?" asked Michael Gazzaniga, director of the Arts and Cognition Consortium, made up of researchers from seven major institutions, that was established by the Dana Foundation in 2004.<sup>9</sup>

Gazzaniga spoke at a consortium summit in 2009 at Johns Hopkins University, where researchers reviewed new findings emerging from brain imaging. In a published summary of the summit's key findings, Gazzaniga identified links between "high levels of music training and the ability to manipulate information" in both working memory, which allows people to reason and collect information, and long-term memory even beyond the domain of music training. The researchers found that interest in performing arts leads to high levels of motivation and

sustained attention that in turn improves cognition generally.<sup>10</sup>

Other researchers are looking at how arts involvement might affect attendance, dropout and graduation rates. The Center for Arts Education, an advocacy organization, looked at graduation rates at more than 200 New York City schools over two years. Schools in the top third in graduation rates offered their students the most access to arts education and the most arts resources, while schools in the bottom third offered the least.<sup>11</sup>

"We can't say it's a direct correlation, but we do believe the arts influence that," says Lori Sherman, the center's development director. "Principals will tell you the arts have changed the culture of their schools, from teachers working more collaboratively to kids being happier, to kids showing up at school."

In a long-term study, James Catterall, a professor emeritus of education at the University of California, Los Angeles, found that children who were engaged in the arts showed many positive academic improvements. Drawing on a wealth of data from the National Education Longitudinal Study, he looked at how several hundred low-income students did over time.

Those with high arts involvement graduated from college and completed postgraduate degrees at higher rates than their peers with low arts involvement, he found.<sup>12</sup>

But other researchers question the evidence suggesting the arts lead to student success. “Another explanation could be that the types of students attracted to the arts are the types more likely to achieve these benefits rather than the arts causing them,” Dan Serig, an associate professor of art education at the Massachusetts College of Art and Design, wrote in a review of Catterall’s work.<sup>13</sup>

Eisner, of Stanford University, has pointed out that if students take more coursework in any subject — whether art, science, foreign languages or history — their SAT scores will rise.<sup>14</sup>

Hetland, of the Massachusetts College of Art, who has collaborated with Boston College’s Winner, says, “There are some studies that have shown positive results and others have failed to. The ones that have failed to tend to be more rigorously designed and also tend to be less known because people don’t want to know those results.”

Winner says she’d like to see more experimental studies, such as one conducted by E. Glenn Schellenberg, a professor of psychology at the University of Toronto. Schellenberg administered IQ tests to 144 6-year-olds before they entered first grade. During the coming year, the children were randomly assigned to one of four groups for 36 weeks. Two groups received after-school music instruction

(keyboard or vocal), one received drama instruction and one had no special arts class. The children’s IQ’s were then retested. Those with music in-

Whether or not the research on linking arts to academic achievement bears out, say Eisner and others, educators should focus chiefly on art’s inherent value.

“It’s too utilitarian an argument to say that test scores will grow if you do the arts,” says New York University’s Ravitch. “I don’t think it’s relevant, and it doesn’t matter. They’re important for our spirit and soul and humanness. No one with any means, who can pick the best school in the nation, would pick a school without the arts.”

### **Does No Child Left Behind harm arts education?**

When President George W. Bush unveiled the No Child Left Behind Act (NCLB) in

2001, arts educators were pleased that the arts were among the 10 core subjects that all children should learn, along with math, reading and other basics. But with schools being assessed primarily by their students’ reading and math scores, many feel the arts and other subjects are getting short shrift.

“Testing of reading and math became the basis for determining whether school districts were making annual yearly progress, whether they’d be failing or excellent,” says Domenech, of the American Association of School Administrators. “This put a lot of pressure on educators, from classroom teachers to principals to superintendents. I think it’s fair to say the emphasis on reading and math deemphasized other areas, including art, music and physical education, that we as educators feel are important to a comprehensive education. Reading and math are basic skills, but they hardly compromise the totality of the curriculum.”



Inner-City Arts

*A youngster works on her art project at Inner-City Arts, which provides arts education for elementary, middle and high school students through a partnership with the Los Angeles Unified School District and local charter and parochial schools. Founded in 1989, the program has served more than 150,000 children living in the city’s poorest neighborhoods.*

struction had a greater increase in IQ than the other two groups, regardless of their socioeconomic background, and the drama group had better adaptive social skills.

“I get pretty consistent effects between music lessons and IQ,” Schellenberg says in an interview. Moreover, he has found music training can improve language. In his study, he concluded: “Does music make you smarter? The answer is a qualified yes.”<sup>15</sup>

Schellenberg suggests several possible reasons for that. For example, he says, music lessons are “school-like” and have similar benefits. And music training, he says, improves a “constellation of abilities,” among them memorization, expression of emotions, attention and fine-motor skills. Still, he says more research is needed, and he stresses that to see real benefit, students likely need more music instruction than is possible during the school day.

Gail Connelly, executive director of the National Association of Elementary School Principals, agrees. "NCLB, we felt, really starved the education of the whole child and forced the focus to be much more narrow," she says.

Liza Linder, an art teacher in Prince George's County, Md., in suburban Washington, also is critical of NCLB. "I don't get it," she says. "Every child that is musically inclined, every child who is visually inclined, they are left behind. I've seen instrumental music being taught in a hallway or in the cafeteria during lunch."

But others say the jury on NCLB is still out.

"One of the positive things about NCLB is that the arts are listed as a highly qualified area, meaning you have to have highly qualified teachers teaching those subjects," says Linda Adams, supervisor of fine arts for Montgomery County Public Schools in Maryland, also in suburban Washington. In her county, which includes affluent communities such as Bethesda and Chevy Chase, every elementary school has art and music weekly for all students, and high school students must take at least one art credit to graduate.

A 2010 survey of visual arts teachers by F. Robert Sabol, president of the National Art Education Association, found mixed views of NCLB's effects on visual arts education. "Yes, NCLB has caused negative impacts," he says. "However, being fair, there were some positive effects as well. Teachers . . . focused a great deal more time on assessment of learning. Arts educators know they are held accountable. They're looking at national standards, improving their instructional techniques, looking at areas of strength, and also areas where improvement was needed."<sup>16</sup>

Lynn Tuttle, director of arts education for the Arizona Department of Education and president of the State Education Agencies' Directors of Arts Education, a national association, says

## Americans Strongly Back Arts Education

*More than 80 percent of Americans believe arts education improves children's attitudes toward school and teaches them to communicate effectively with adults and peers.*

### Americans' Views on Arts Education, 2005

- **86 percent** agree arts education improves a child's attitudes toward school.
- **83 percent** believe arts education teaches children to communicate effectively with others.
- **79 percent** say incorporating arts into learning is the first step in addressing what's missing in public education.
- **79 percent** believe it's important for them to get personally involved in improving arts education.

*Source: "New Harris Poll Reveals That 93 Percent of Americans Believe That the Arts Are Vital to Providing a Well-Rounded Education," Americans for the Arts, June 2005, [www.artsusa.org/news/press/2005/2005\\_06\\_13b.asp](http://www.artsusa.org/news/press/2005/2005_06_13b.asp)*

NCLB is a mixed blessing. Her position in Arizona is funded with NCLB money, although she acknowledges this may not be true across the nation. In addition, she says, "I have had access to \$6-7 million of NCLB funds which I've used to fund arts integration and arts education [in Arizona schools]. So it can be a catalyst."

Inspired leadership that can use the law to good ends is the key, she says. "I credit our Title I director, who is a big believer in arts education and arts integration as a tool for achievement in other parts of the curriculum," she says.

Education scholar Chester E. Finn Jr., president of the Thomas B. Fordham Institute, a conservative think tank, questions whether the arts should even have been elevated to their status as a core subject under NCLB. "The big four are English, math, history and science," he says. "It's the central obligation to get kids competent in those four subjects. It's desirable to get kids competent in other things, but I don't think it's imperative."

Finn says he's not the only one who wants the focus to be on fewer subjects. "I've heard principals say with some justice that students have got to read before they can do much else in school," he says. "They've got to master basics first or they'll never get the broad-based education."

### ***Should the arts be integrated into science and math education?***

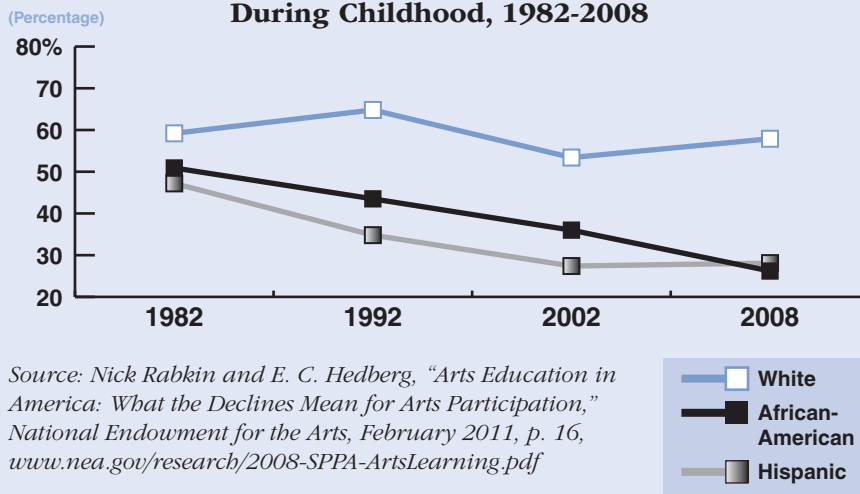
In recent years, arts advocates began pushing for a closer link between the arts and science, technology, engineering and math (known as STEM) — thus turning STEM to STEAM. (See "At Issue," p. 269.)

Support for STEM itself has gained ground and is viewed by many as fundamental to global competitiveness and innovation. In his 2011 State of the Union address, President Obama called for 100,000 new STEM teachers to be trained over the next decade. In December, the White House Office of Science and Technology Policy (OSTP) released an inventory of federal STEM education programs, the most

## Arts Education for Minorities on Decline

*Fifty-eight percent of whites ages 18 through 24 reported receiving arts education during childhood, about the same percentage in 2008 as in 1982. African-Americans and Hispanics received less arts education than whites, and the level declined significantly over the same period, falling below 30 percent in 2008.*

**Percent of 18- to 24-Year-Olds Who Received Arts Education During Childhood, 1982-2008**



comprehensive to date, identifying \$3.4 billion spent on 252 projects in 2011. This spring OSTP will release a five-year strategic plan for STEM education.<sup>17</sup>

Using the arts to strengthen learning in science, technology, engineering and math would foster greater innovation in scientific research and draw more students to the STEM field, STEAM proponents say.

Bill O'Brien, senior adviser for program innovation at the National Endowment for the Arts (NEA), supports the linkage. "In the last decade or so we have really narrowed our focus on certain types of learning that we felt were entwined with technology, and we may have missed how important imagination and creativity were," he says. "The whole notion of STEM to STEAM allows us to think of the mind as a holistic organ that needs all of this stuff to work together in order to function at the highest levels."

In January 2011, NSF and the Rhode Island School of Design (RISD) brought together artists and designers with STEM researchers. At the conference, RISD President John Maeda asked, "How do we make innovation happen? It happens through science, technology, engineering and mathematics. Could it be missing something that is actually quite important? It's missing the arts — the right-brain innovation that has propelled our country, made us competitive."

The Rhode Island School of Design is actively pushing STEM to STEAM. It hosted a congressional briefing in Washington in June 2011 and sent a delegation to the Massachusetts Institute of Technology last October to promote RISD's STEM-to-STEAM initiative. Maeda points to studio art skills such as creative problem solving, flexible thinking and risk-taking as fundamental to innovative research.

Although the National Science Foundation has given small grants to explore the intersection of the arts and STEM, it's not a major focus for the foundation, says Al DeSena, a program director in NSF's education and human resources directorate. But, he adds, "Some of us would make a claim that the fundamental processes of the human mind are pretty similar in terms of arts and sciences, and you can see that in the lives of artists and scientists."

Robert Root-Bernstein, a professor of physiology at Michigan State University and winner of a MacArthur "genius" Fellowship, says the arts and science used to be much more closely linked. "We need to go back to the way people used to be trained," he says. "Until you were 10 or 12, you would go out and explore nature, make collections, draw them, compare them, learn how to classify, look at them through a microscope, paint them, do all these things so you actually have observed them and handled them and smelled them, you literally know what they are."

Too often, he says, today's students have not been taught essential scientific skills. "The arts are really, really good at teaching people," he says. "Artists learn how to observe acutely, how to abstract something to get at the essence, how to make models of things" — all skills which help scientists figure out problems and express their ideas.

Root-Bernstein studied Nobel laureates and found almost all were engaged in artistic pursuits. Compared with other scientists, they were 25 times more likely to sing, dance or act and 17 times more likely to be a visual artist. (See "At Issue," p. 269.)

High-achieving science and technology graduates of the Michigan State University Honors College also had an artistic bent, he found. "Arts-and-crafts experiences are significantly correlated among these graduates



with producing patentable inventions and founding new companies,” Root-Bernstein and colleagues wrote in 2011 on how arts education could boost Michigan’s economy.

But others think the idea of turning STEM to STEAM is misguided. Susan Singer, a biology professor at Carleton College, in Northfield, Minn., worries the merger would mean dilution, rather than cross-fertilization.

Although she agrees that the scientific pursuit involves “a huge amount of creativity,” she worries that “both art and science could potentially be diluted if we can’t be clear about both the similarities and the differences.

“For example, if you took an approach that was rigorous and valid in science, you could end up with something really dismal in terms of the world of art, because they have different ways of framing and seeing the world — not that one is better than the other, or that one has cornered any kind of truth compared to the other.”

Physicist Alan Friedman, a consultant on museum development and communicating science to the public and former director of the New York Hall of Science, has long been interested in the intersection of science and literature. But he says that while the arts are valuable, they should be studied not as part of science but parallel with it.

“In STEM there are clear, rigorous measures,” he wrote in an email. “For



AFP/Getty Images/Mandel Ngan

*Students at Booker T. Washington High School in Memphis, Tenn., perform at graduation ceremonies on May 16, 2011. With a graduation rate that went from 55 percent in 2007 to 81.6 percent in 2010, the school won the Obama administration’s 2011 Race to the Top High School Commencement Challenge. Ninety-five percent of Americans consider music as part of a well-rounded education.*

example, an idea in science must be ‘falsifiable’ — i.e., built into an idea must be a way to show how it could be tested and found wanting. There is nothing remotely like this measure of value in the arts. Deciding what is good and what’s not in the arts is a more subjective, changing notion. That flexibility over time and culture is one of the great strengths of the arts, but there is nothing remotely like that notion in STEM.” (See “At Issue,” p. 269.)

Root-Bernstein, both an artist and a historian of science, disagrees. “If you ask any scientist, he wants to come up with something unique — certainly it has to be replicated, but they want to come up with something unique,” he says. “The theory of thermodynamics was invented by 12 different people, and each formulation was different. What we call thermodynamics was a consensus, but each had a unique stamp of the inventor on it, just as an artist has a unique stamp on a painting.”

But Friedman responds that all the liberal arts are worthy. “Why privilege

STEM and art uniquely by merging them but not put history in too (SHTEAM)? I’d argue that art and history are both essential to understanding life and the universe, both illuminate STEM and both can be illuminated by STEM. But we couldn’t stop there. How can we deny the fundamental connections between STEM and civics, religion, anthropology, archeology, philosophy?”

Finn, the education scholar, agrees. “I think that what we’re dealing with here is a kind of goals inflation or mission creep,” he says. “It’s fine for schools also to teach the arts,

but I don’t think the argument here is much more compelling than that of the other subjects that want to get on this bandwagon.” ■

## BACKGROUND

### ‘Revolutionary Accomplishment’

Dance, music, and storytelling have been part of every culture and time period in human history. The earliest humans drew pictures on caves and carved statues from stone, marking “a revolutionary accomplishment in the intellectual development of humankind,” according to the Metropolitan Museum of Art.<sup>18</sup>

As the first National Standards for Arts Education, developed by a consortium of arts educators in 1994, put it, “All peoples, everywhere, have an

abiding need for meaning — to connect time and space, experience and event, body and spirit, intellect and emotion. People create art to make these connections.”<sup>19</sup>

But despite the arts’ universality, their place in education has fluctuated over time.

In ancient Greece, Aristotle believed the elite should focus on intellectual pursuits rather than crafting works of art. Aristotle put “what are now called the ‘fine’ arts, music painting, sculpture, in the same class with menial arts so far as their practice is concerned,” wrote John Dewey (1859-1952), a prominent American philosopher and educator. The intellectual class should appreciate music — but not perform it, Dewey said of Aristotle’s view. Aristotle viewed painters, sculptors, and musicians as hirelings, much like cooks.<sup>20</sup>

But that began to change during the Renaissance, a period spanning roughly the 14th to 17th centuries during which the arts flourished. In 15th-century Florence, practitioners of visual arts moved from being viewed as technicians to being revered as creators and were supported by wealthy patrons. The first art schools were created, the arts became an intellectual pursuit and the seeds of “art for art’s sake” were planted.<sup>21</sup>

In the United States, while fine art has long been seen as integral to a liberal arts education, the public seems to have always been ambivalent about its place in K-12 schools.

“The arts . . . have never enjoyed a secure place in American public education,” said the National Endowment for the Arts. “There have been earnest debates about the value of the arts in education throughout our history, and the rationale for their inclusion in the curriculum has rarely been based on the value of learning the arts themselves. Rather, it has focused on their value in achieving other broadly accepted goals of public education.”<sup>22</sup>

In the past, some of those goals furthered societal interests beyond the school walls. For example, the first public school curricula included music, aimed at advancing the quality of church singing.

The notion that skills learned in arts classes might transfer to other academic areas — still being debated today — appears to date back to the 1800s. According to the NEA, “An influential report in 1836 urged the new [public] schools to include music instruction to ‘promote [students’] progress in other subjects.’ ”<sup>23</sup>

Even in the 19th century, global economic competition influenced what should be included in the curriculum. Public schools began including drawing in the 1800s not for aesthetic reasons but to help U.S. manufacturers keep pace with other countries during the Industrial Revolution. The idea was to foster a generation of designers to compete with factories in Europe.

In 1870, the Massachusetts Drawing Act mandated drawing in public education. Soon after, educator Walter Smith arrived in Massachusetts from England to direct drawing in public schools in Boston. He later founded the nation’s first normal school, which included his method for teaching drawing as part of the curriculum.<sup>24</sup>

At the turn of the 20th century, art history and the study of master works were added to public school coursework, in part to teach moral values and cultural traditions.

## Creativity Rationale

In the early 1900s, Dewey, the architect of modern progressive education, argued that children need to experience and make art as well as learn how to appreciate it. The arts “are not only intrinsically and directly enjoyable, but they serve a purpose beyond themselves,” he wrote. “They reveal a depth and range of meaning

in experiences which otherwise might be mediocre and trivial. . . . They are not luxuries of education, but emphatic expressions of that which makes any education worthwhile.”<sup>25</sup>

Throughout much of the 20th century, arts education enjoyed a steady rise, although the data are far from complete. In 1930, 20 percent of students took some arts in school; that number grew to 50 percent in the 1970s, as students completed more years of schooling than in the past.<sup>26</sup>

Early childhood education was also blossoming, led by pioneers such as Jean Piaget and cultural psychologist Jerome Bruner. Bruner identified two main ways humans manage knowledge of their world: logical-scientific thinking and narrative thinking — including drama, song and fiction. Schools have focused on the former, but Bruner argued, “It is only in the narrative mode that one can construct an identity and find a place in one’s culture. Schools must cultivate it, nurture it, cease taking it for granted.”<sup>27</sup>

In the 1940s educator Viktor Lowenfeld of Pennsylvania State University and others developed the creativity rationale for arts education. Lowenfeld would later write that its goal was “not the art itself or the aesthetic product or the aesthetic experience but rather the child who grows up more creatively and sensitively and applies his experience in the arts to whatever life situations may be applicable.”<sup>28</sup>

## Doughnuts and Drama

As scholars analyzed the merits of arts education, teachers of the arts were organizing as professionals. In 1907, the Music Supervisors Conference (now the National Association for Music Education) was founded. The association continues to work to include music in public school curricula and advance the music-teaching profession.

*Continued on p. 264*

# Chronology

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## **1900s-1920s**

***New progressive education movement calls art crucial for children's development.***

### **1907**

Music Supervisors Conference is precursor of the first professional arts educator association.

### **1915**

American education reformer John Dewey writes *Democracy and Education*, calling for students to create art as well as appreciate it.

### **1929**

Three West Virginia teachers form National Thespians to foster theater education.

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## **1930s-1950s**

***Arts education gains popularity as children's creativity is recognized.***

### **1930s**

Twenty percent of school children receive some arts education.

### **1942**

Museum educator Victor D'Amico's *Creative Teaching in Art* helps to develop the creativity rationale for arts education.

### **1959**

British scientist and novelist C. P. Snow delivers "The Two Cultures," lecture, bemoaning the separation of science and literary arts.

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## **1960s-1970s**

***Research on benefits of arts education grows.***

### **1967**

Project Zero established at Harvard to study arts education. . . . Tanglewood Symposium says music in schools should include songs of all cultures.

### **1970s**

Half of U.S. school children receive at least some arts education. . . . Stanford's Elliot Eisner urges schools to teach the arts for their unique contribution "to human experience and understanding," rather than as a means to an end.

### **1977**

Philanthropist David Rockefeller Jr. convenes national panel to explore how arts can be integrated into the school curriculum.

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## **1980s** *Access to arts education in public schools begins to decline.*

### **1982**

President Ronald Reagan establishes first President's Committee on Arts and the Humanities. . . . Getty Center for Education in the Arts develops "discipline-based arts education."

### **1983**

Harvard developmental psychologist Howard Gardner develops theory of multiple intelligences.

### **1988**

National Endowment for the Arts' "Towards Civilization" study warns the arts in schools are in jeopardy.

### **1989**

Kentucky Supreme Court orders state schools to include the arts to teach appreciation of students' cultural heritage.

## **1990s** *Arts recognized as core subjects as research on arts and intelligence picks up.*

### **1992**

Chicago Arts Partnerships in Education is founded to lead school reform.

### **1993**

Researchers identify "Mozart effect," linking music to improved spatial-reasoning skills.

### **1994**

President Bill Clinton signs Goals 2000 Act, including the arts as a core subject. . . . First National Standards for Arts Education published.

### **1998**

National Dance Education Association established.

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## **2000-Present**

***Arts confirmed as core subject but threatened by budget cuts.***

### **2002**

President George W. Bush signs No Child Left Behind Act, confirming the arts as a core subject. . . . Partnership for 21st Century Skills identifies creativity and innovation as critical workforce skills.

### **2009**

Brain imaging shows arts training boosts cognitive abilities.

### **2011**

President's Committee on the Arts and the Humanities calls for schools to include high-quality arts programs.

### **April 2012**

Department of Education to release first national survey in a decade on status of arts education in schools.

## Arts-Based School Wins Supporters

*"The climate is the kind of place you'd want for your own child."*

Jana Jean teaches science at a charter high school in Oklahoma City. But sometimes it seems she's more of an arts teacher.

In her advanced chemistry class, for example, Jean taught a six-week unit on metals in which students learned about heat treating, a process that changes a metal's physical or chemical properties. Jean linked the lesson to artistic design. Students "had to design a metal bookmark," she says. "They had to know what heat treatment to use and what metal to choose to get the properties they needed." Similarly, after a unit on ceramics, the students designed glass jewelry.

Combining science and art lessons is a hallmark of a small but growing innovation in elementary and secondary education called A+ Schools. As education reformers seek ways to transform public schools, the model is gaining adherents, with 124 A+ Schools in three states by this summer.

The model was created in 1995 in Winston-Salem, N.C., by the Kenan Institute for the Arts. Today, there are A+ Schools in North Carolina, Oklahoma and Arkansas. In February, Arkansas A+ Schools received former President Bill Clinton's endorsement.

As noted by the President's Committee on the Arts and the Humanities, "More than 12 years of research about A+ Schools in North Carolina tracked consistent gains in student achievement, the schools' engagement of parents and community and other measures of learning and success." Most notably, the report continued, "A+ Schools with higher proportions of disad-

vantaged and minority students performed as well on statewide reading and mathematics assessments as students from more advantaged schools. This is doubly impressive considering that while other schools have focused on basic skills in response to high-stakes testing, the A+ Schools have been able to achieve reading and mathematics gains on statewide accountability tests without narrowing the curriculum."<sup>1</sup>

Jean Hendrickson, executive director of Oklahoma A+ Schools, says she'd long sought a transformational model, especially for schools with high numbers of impoverished students, such as Mark Twain Elementary in Oklahoma City where she was principal. In 2001, she was selected as national principal of the year from Oklahoma and was part of a group sent to North Carolina to investigate A+ Schools. "I came back convinced I had found the model I'd been looking for my entire professional career," she says. Today Oklahoma has 70 A+ Schools, with four more scheduled to be added soon.

"We're committed to arts every day, for every child," says Hendrickson. Some Oklahoma A+ Schools have specialists for all four art forms — visual arts, music, drama and dance — while others have none, Hendrickson says. "Arts every day has to reflect the community in which it resides," she says. "If there's not an arts specialist on staff, how do we provide the capacity to deliver a genuine arts connection that supports broader learning?"

The arts are one of eight interrelated components that form the basis of A+ Schools. The model draws from Harvard be-

*Continued from p. 262*

In 1929, in a small town in West Virginia, three educators came up with the idea of an honor society for high school theater students. National Thespians (now the Educational Theatre Association) grew rapidly, with 350 troupes formed by 1935. After the start of World War II, the young actors raised money to buy play scripts to send to troops overseas. "Doughnuts and coffee are provided to these soldiers by many sources, but the special privilege of providing them with dramatic literature is ours," the thespian troupes were told in a fundraising appeal.<sup>29</sup>

Soon after the war, the National Art Education Association was founded, to promote visual arts education. The National Dance Education Organization,

representing the youngest and smallest of the arts education fields, was formed in 1998.

Over time, art and music became a regular part of an elementary school education. By secondary school, arts courses generally became electives, though in some school systems they were required for graduation.

In 1982, the rise in arts education came to an abrupt halt and began a steady decline. In the preceding decades, a long line of academic theorists had promoted the study of the arts and its role in child development.

In 1967 American philosopher Nelson Goodman founded Project Zero at Harvard University to study arts education. According to the project's website, "Goodman believed that arts

learning should be studied as a serious cognitive activity, but that 'zero' had been firmly established about the field; hence, the project was given its name."<sup>30</sup>

Throughout the 1960s and '70s, there was a growing acceptance of a whole-child approach to education that included a robust arts-rich environment. Harvard developmental psychologist Howard Gardner, who served as co-director of Project Zero from 1972-2000, developed his theory of multiple intelligences: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal and intrapersonal. "The purpose of school should be to develop intelligences and to help people reach vocational and avocational goals that are appropriate to their particular spectrum of intelligences," he wrote.<sup>31</sup>

havioral psychologist Howard Gardner's multiple intelligences concept and recent brain research. "We want there to be experiential, hands-on learning," says Hendrickson. "We want enriched assessment that says a standardized test score one day does not tell me everything about what my students need to know and understand." Collaboration — among teachers, students, parents and other schools is key, she says.

The model is kept affordable, she says, by developing a cadre of A+ Fellows within each school who then train others. The fellows receive on-site training by arts specialists and attend summer institutes.

Susan Brewer, a 40-year education veteran and A+ Fellow, teaches third grade at Linwood Elementary in Oklahoma City, integrating arts throughout the curriculum. In reading, for example, she focuses on getting pupils to see detail. At the same time, the art teacher will encourage the children to develop detail in their drawings. "She'll say, 'this is a nice tree, but where's the bark? Where are the leaves?'" Other concepts, such as texture, are reinforced across the curriculum, whether it's in art or on a topographical map.



*Jean Hendrickson of Oklahoma A+ Schools says combining science and arts lessons is "the model I'd been looking for my entire professional career."*

Oklahoma A+ Schools

Oklahoma A+ Schools show modest test score improvement over other schools that have not adopted the model. In 2010-2011, for example, the state's A+ Schools average Academic Performance Index score was 1,151, compared to 1,113 for schools in the district and 1,138 for Oklahoma statewide.<sup>2</sup>

Test scores, though, are not how A+ Schools measure success, says Hendrickson. "Whether it's a good day or bad, whether the test scores came out higher or lower, everybody is working toward the best student outcomes that we can get," she says. "Teacher and student attendance goes up, parent engagement goes up, there is evidence of creative learning and the climate is the kind of place you'd want for your own child."

— **Beth Baker**

<sup>1</sup> "Reinvesting in Arts Education — Winning America's Future Through Creative Schools," President's Committee on the Arts and the Humanities, 2011, pp. 20-21, The report cites D. Corbett, *et al.*, "The A+ schools program: school, community, teacher, and student effects," 2001, Kenan Institute for the Arts.

<sup>2</sup> Data compiled by Oklahoma A+ Schools, based on test scores published annually by the Oklahoma State Department of Education.

Gardner and colleagues developed the Arts PROPEL program as a way to teach the arts and assess students' work. Students were given the chance to compose works of art and to reflect on how artistic masters made choices in creating their works.

In 1982 the Getty Center for Education in the Arts, based in Los Angeles, began pushing for more rigor in arts education through "discipline-based arts education." The idea was that the arts curriculum should include four interrelated disciplines — art making, art history, art criticism and aesthetics.<sup>32</sup>

In contrast, says Boston College's Winner, also a principal investigator at Project Zero, she and her colleagues argued that the core of arts

education is the making of art. Only by making art will students become interested in art history or appreciation, they argued.

On another front, E. D. Hirsch, a retired professor of education and the humanities at the University of Virginia, and others argued that the arts and art appreciation should be part of a core curriculum to help all students become culturally literate. William Bennett, a conservative former Secretary of Education, and colleagues wrote, "When we hold up to students true masterpieces of art and music, we teach them to discriminate between what is fine and what is mediocre, between the sublime and the mundane. We cultivate in their hearts a love for beauty."<sup>33</sup>

## Federal Role

Over the last 35 years, arts education has reflected changes in national education policy generally.

In 1977, a blue-ribbon panel of artists, educators, business leaders and foundations endorsed "a curriculum that puts 'basics' first, because the arts are basic. And we suggest not that reading be replaced by art but that the concept of literacy be expanded beyond word skills."<sup>34</sup>

That view was eclipsed in 1983, however, by "A Nation at Risk," a landmark report by President Ronald Reagan's National Commission on Education Excellence that warned that American schools faced a "rising tide of mediocrity." The report laid the

### Strong Support for Music in Schools

*More than 90 percent of Americans consider music part of a well-rounded education and feel schools should offer it as part of their regular curriculum. About 80 percent say music education should be mandated for every student.*

#### American Attitudes Toward Music in Education, 2003

- **95 percent** consider music part of a well-rounded education.
- **93 percent** feel schools should offer music as part of regular curriculum.
- **79 percent** say music education should be mandated for every student.

*Source: Linda Lyons, "Americans Want Music Students to Play On," Gallup, May 2003, [www.gallup.com/poll/8434/americans-want-music-students-play.aspx](http://www.gallup.com/poll/8434/americans-want-music-students-play.aspx)*

foundation for today's focus on reading, math and, to some extent, science. The arts were de-emphasized.

"To compound the uphill struggle the arts encountered in the early 1980s, the visibility of the arts within the federal education department was eliminated," wrote Doug Herbert, special assistant in the Office of Innovation and Improvement in the U.S. Department of Education. "The former Arts and Humanities Office, responsible for a relatively small but innovative set of annual grants to school districts for curricular and instructional improvements, was abolished in 1981."<sup>35</sup>

In 1988, NEA renewed the focus on arts education, arguing that it was in trouble — considered by many a frill, with no common standards of what should be taught.<sup>36</sup>

In response, arts education advocates, including NEA Chairman John Frohnmayer, promoted the arts at hearings around the nation as a core part of the National Education Goals being developed under the administration of President George H. W. Bush and the nation's governors in 1989. The goals were an attempt to raise education standards and achievement nationally.

"The word got out that the National Education Goals [including the core subjects to be covered] didn't have arts listed," Herbert recalls. "People started showing up at public hearings en masse, saying, 'you have to have the arts in that list of subjects.'"

Meanwhile the Consortium of National Arts Education Associations began developing national voluntary standards for schools in dance, music, theater and visual arts. At the same time, NEA and the Getty Center for Education in the Arts donated \$1.25 million to develop a framework for including the arts in the National Assessment of Educational Progress (NAEP), better known as the "nation's report card."

All these efforts paid off. By 1994, when President Bill Clinton unveiled Goals 2000 for education, a set of nine subjects in which students were to demonstrate competency, the arts were among them.

Clinton also "allocated a lot of funding for the arts," says Jane Bonbright, executive director of the National Dance Education Association. "Our people used that funding galore to get the arts established. That's one reason why now we have 37 states that are certifying teachers in dance."

Also in 1994, the first National Standards for Arts Education were published, an important step in legitimizing arts education. The standards, which included detailed content for each art form, called for graduating high school students to be able to:

- Communicate at a basic level in the four arts disciplines [visual arts, music, drama and dance];
- Communicate proficiently in at least one art form;
- Develop and present basic analyses of works of art;
- Have an informed acquaintance with exemplary works of art from a variety of cultures and historical periods; and
- Relate various types of arts knowledge and skills within and across the arts disciplines.<sup>37</sup>

To encourage school systems to adopt high-quality arts programs, the U.S. Department of Education launched the Arts Education Model Development and Dissemination Grants program in 2002. In 2009, for example, the program awarded \$265,000 to help Milwaukee Public Schools integrate arts education into the curriculum at four high-poverty schools.<sup>38</sup>

The Obama administration has used the bully pulpit to call attention to the arts and subjects other than reading and math, which have been the focus of many schools due to testing requirements. At a speech to the Arts Education Partnership in April 2010, Duncan, the Education secretary, said, "For decades, arts education has been treated as though it was the novice teacher at school, the last hired and first fired when times get tough."

Nevertheless, the administration's Race to the Top education policy continued NCLB's focus on reading and math testing.

In 2011, the President's Committee on the Arts and the Humanities released a major report, "Reinvesting in Arts Education — Winning America's Future through Creative Schools," the

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# Art Opens Vistas for Kids With Disabilities

*“It’s motivational, it’s inspirational, it helps with attention.”*

At Zane North Elementary School in Collingswood, N.J., all classes — including two for students with autism — study visual art once a week and music twice a week.

“The arts are huge for special-ed kids,” says principal Thomas Santo, who majored in special education in college. He recently invited a music therapist to visit the special-education classes. “It was a huge hit,” he says. “The kids responded to guitar, singing, drama. From what the teachers have told me, it’s motivational, it’s inspirational, it helps with attention.”

Although research is limited on whether the arts can help students with learning disabilities succeed in school, studies show promise, says Christine Mason, associate executive director for research and development for the National Association of Elementary School Principals, in Alexandria, Va.

“Overall, most of the research is showing that you can get gains in student achievement and literacy by using the arts as a tool to integrate learning for all children, including those with disabilities,” she says. “Even if it may not get a tremendous jump up in test scores, those of us who have done research in this area feel, for the most part, you want to look [not only at] art’s impact on literacy and student achievement but also art for art’s sake.”

In a 2005 study, Mason and her colleagues held 34 focus groups of teachers in 16 states to better understand how educators perceived the value of the arts for students with disabilities. The teachers felt the inherent flexibility of the arts help students express emotion in appropriate ways, exercise problem-solving and decision-making skills and access content through multiple avenues.

The arts also provide teachers “with opportunities to meet the unique needs of their students,” according to a summary of the study, which was conducted for VSA Arts, a division of the John F. Kennedy Center for the Performing Arts in Washington that provides arts and education opportunities to people with disabilities.<sup>1</sup>

In an earlier study for VSA Arts (formerly called Very Special Arts), other researchers observed three model arts-intensive schools aimed at students with learning disabilities. They found “significant opportunity for documenting the use of the arts as

a primary strategy for meeting the learning goals of students with special needs,” according to the study.<sup>2</sup>

The role of drama in helping children with learning disabilities improve their language and social skills also has been examined. In a 1995 study, 35 students ages 5 to 11 were divided into two groups — 21 were assigned to creative drama classes and 14 were

a control group and had their regular speech therapy sessions. The drama group had four three-week units aimed at enhancing four behaviors and skills: courtesy, self-control, focus and social compliance (following written instructions). After 12 weeks, members of the drama group had improved in all four areas and also had significantly improved their oral expressive-language skills, compared to the control group. The researchers tested the children two months later and found that the beneficial effects of drama held up over time.<sup>3</sup>

Jane Bonbright, executive director of the National Dance Education Organization, has used dance to teach literacy and math skills to children with Down syndrome. “They didn’t understand concepts like over, under, up, down, one versus four,” she says. Through dance, she showed the children how to “perform the concepts.”

“Kids first and foremost are kinesthetic learners,” she says. “What is ‘over’? You put shoes out and say jump over these shoes. They begin to feel in their body what is ‘over.’ Same with counting. You can teach them to jump once, jump twice,

jump four times. They begin to get these concepts of math and relationships in a very fundamental way.”

— **Beth Baker**



VSA Arts of Florida

*A drama student performs during a showcase in Miami sponsored by VSA Arts, which provides arts-intensive programs for students with disabilities.*

<sup>1</sup> For a summary of the study by Arts Education Partnership: C.Y. Mason, et al., “Impact of Arts Integration on Voice, Choice, and Access. Teacher Education and Special Education,” *The Journal of the Teacher Education Division of the Council for Exceptional Children*, 31 (1), 2008, p. 36.

<sup>2</sup> Dr. Carol Keirstead and Wendy Graham, “VSA Arts Research Study: Using the Arts To Help Special Education Students Meet Their Learning Goals,” National Endowment for the Arts, VSA Arts and RMC Research Corp. (2004), p. 1, [www.kennedy-center.org/education/vsa/resources/VSAarts\\_Research\\_Study2004.pdf](http://www.kennedy-center.org/education/vsa/resources/VSAarts_Research_Study2004.pdf).

<sup>3</sup> A summary of the study, “The Effects of Creative Drama on the Social and Oral Language Skills of Children with Learning Disabilities,” is found in *Critical Links — Learning in the Arts and Student Academic and Social Development*, Arts Education Partnership, 2002, p. 20, [www.aep-arts.org/publications/info.htm?publication\\_id=10](http://www.aep-arts.org/publications/info.htm?publication_id=10).

*Continued from p. 266*

federal government's first substantive examination of arts education in more than a decade. The commission argued that every school should offer an arts-rich environment.

But with schools by and large controlled locally, there's only so much the federal government can do to implement its vision. New York state law, for example, states that high school students must complete one year of art education, taught by a certified art teacher. But at least 20 percent of schools don't have a certified art teacher. "The federal government does say the arts are a core subject, [but] they are not treated as a core subject," says Sherman of New York's Center for Arts Education. "There's no accountability." ■

## CURRENT SITUATION

### Inequities in Access

A number of studies confirm that schools in lower-income communities and those with high concentrations of racial or ethnic minorities often lack arts education.

A 2009 survey by the Government Accountability Office on the effects of the No Child Left Behind Act found that "teachers at schools identified as needing improvement and those with higher percentages of minority students were more likely to report a reduction in time spent on the arts."<sup>39</sup>

In 2008 the NEA asked respondents ages 18-24 if they had had arts education in childhood. Compared to a survey done in 1982, the declines for African-American and Hispanic children were "quite substantial" compared to white respondents. (*See graph, p. 260.*) "There's a big inequity as far

as racial and ethnic groups as well as lower socio-economic groups and geographical areas — both rural and inner city, although we haven't done a thorough analysis on this," says Sunil Iyengar, who directs the NEA's Office of Research and Analysis.

The 2008 National Assessment of Educational Progress — the most recent federal "report card" for the arts — found that students from lower-income families — those eligible for free or reduced-price school lunches — scored 28 points lower in music and nine points lower in visual arts than students ineligible for school-lunch aid. Moreover, scores for white and

Asian/Pacific Islander students were significantly higher in music and visual art compared to African-American and Hispanic students' scores.<sup>40</sup>

Tuttle, of Arizona's arts education department, says rural schools, because of their small size and remoteness, have a hard time funding arts classes. "I have some very small districts," she says. "One has 70 kids in the whole district. The superintendent is the special-education teacher, the bus driver — her ability to provide music or art is not going to happen." Arizona is also home to many charter schools, which often are smaller and unable to hire arts specialists.

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Think 360 Arts/Renee Fajardo-Anstine

*A student shows off the mask she made to celebrate Dia del los Muertos — the Day of the Dead, a Mexican holiday — at Think 360 Arts. The statewide organization provides arts education programs and services throughout Colorado, including programs for students and professional development for teachers.*



# At Issue:

## *Should the arts be integrated with science education?*



**ROBERT ROOT-BERNSTEIN**  
*MACARTHUR FELLOW,  
PROFESSOR OF PHYSIOLOGY  
MICHIGAN STATE UNIVERSITY*

FROM "THE ART OF SCIENTIFIC AND TECHNOLOGICAL INNOVATIONS," SCIENCEBLOGS.COM, POSTED APRIL 11, 2011

**m**ost people are at a loss to be able to identify any useful connections between arts and sciences. This ignorance is appalling. Arts provide innovations through analogies, models, skills, structures, techniques, methods, and knowledge. Arts don't just prettify science or make technology more aesthetic; they often make both possible.

That cell phone or PDA you're carrying? It uses a form of encryption called frequency hopping to ensure your messages can't easily be intercepted. Frequency hopping was invented by the composer George Antheil in collaboration with the actress Hedy Lamarr. Yeah, really.

The first programmable device was invented by J. M. Jacquard to control the looms that made his tapestries, and exactly the same technique was used to program the first computers. He also made the first digital image — out of black and white threads. In fact, the computer chips that run virtually all our devices today are made using a combination of three classic artistic inventions: etching, silk screen printing, and photolithography.

Oh, and that bridge you drove over on the way to work: Good chance its design was invented by an artist. Princeton engineering professor David Billington and Smithsonian historian Brooke Hindle have shown that most of the innovations in bridge design have originated with artistically trained engineers.

In fact, I've just published a study that shows that almost all Nobel laureates in the sciences are actively engaged in arts as adults. They are 25 times as likely as average scientists to sing, dance, or act; 17 times as likely to be an artist; 12 times more likely to write poetry and literature . . . four times as likely to be a musician; and twice as likely to be a photographer. Many connect their art with their scientific creativity.

Moreover, those folks who produce the new patentable inventions and found the new companies to produce them — they, too, are artistically trained: They are far more likely to have continuous participation in drawing, painting, dancing, woodworking, metal working, and mechanics than their less innovative peers. Ninety percent of them, in interviews, expressed the opinion that the arts should be part of every scientists' and technologists' education. Eighty percent of them could point to specific ways in which their arts training directly enhanced their innovative ability.

In sum, successful innovators in sciences and technology are artistic people. Stimulate the arts, and you stimulate innovation.



**ALAN FRIEDMAN**  
*CONSULTANT, MUSEUM DEVELOPMENT AND  
SCIENCE COMMUNICATION*

WRITTEN FOR *CQ RESEARCHER*, MARCH 2012

**i**ntegrating science and the arts in education curricula would do a disservice to both realms. Now, I do believe strongly that the arts should be used to strengthen science education and vice versa. And I believe just as strongly that history, philosophy, civics, geography, math, engineering and other fields can and should illuminate science, and again vice versa.

What I object to is, first, singling out the arts as the one cultural enterprise that should be blended with the sciences; and, two, attempting to integrate disciplines, which may be mutually enlightening but also may have profound differences that tend to be downplayed in integrated curricula.

What are some of these profound differences between the arts and the sciences?

- The two decide what's good and what's not in incompatible ways.

In science there are clear, rigorous measures. For example, an idea in science must be "falsifiable" — that is, built into an idea must be a way to show how it could be tested and found wanting. This tough test is a reason why scientists have been able to correct themselves.

There is nothing remotely like this measure of value in the arts, and there is no reason there should be. Deciding what is good and what's not in the arts is a subjective, changing notion. That flexibility allows art dismissed in one milieu to be hugely appreciated in another.

- Science demands that its ideas be completely replicable by others, while the arts celebrate uniqueness.

If other science practitioners cannot soon reproduce the same results using the same ideas, those ideas are rejected. The arts have quite the opposite criterion: Uniqueness is highly desirable and increases value, while easy replicability is a devaluing quality.

I believe in a liberal arts education in which every one of the great cultural enterprises — art, engineering, history, languages, math, science, and so on — is given its place in the curriculum. Let's make sure they all get good introductions, and then let's help learners to put together any pairs, trios or combinations that appeal to them. We can do this institutionally as well, with museums devoted to a combination of art and science, history and technology or math and civilizations. There are valuable insights to be won in every combination.

But fully integrating any of these combinations in the curriculum runs the risk of losing the unique, fundamental distinctions that are behind the glories of each field.

*Continued from p. 268*

Low-income parents may find it difficult to pay for extra programs for their children. “We often see things like band programs or orchestras requiring parents to do more, to pay a fee — not just in the arts, we see it with athletic programs as well,” says Ruppert of the Arts Education Partnership. “Student fees for participation are increasing. The problem is, the wealthier schools that have parents who have resources can afford to donate more and raise more money.”

At Mount Rainer Elementary in Maryland, like other schools in Prince George’s County, visual arts were slashed 30 years ago during a county budget crunch and not restored. As a result, each visual

arts teacher serves four schools, seeing each class only two or three times a year for one hour. There is no art room, and the teachers bring supplies on a cart. “[The students] love art, and they’re very proud of it,” says first-grade teacher Greg Pugliese. “When I make the announcement that we’re having art class, they all cheer.”

Art teacher Linder is responsible for teaching more than 2,000 students in her four schools. “The students are missing a chance to show what they’re capable of, and that’s tragic,” she says. “I’ve had so many teachers tell me [of students], ‘I had no idea that he had an imagination like that, that she could express herself, that she knew deep things about the human

condition that you can’t show in a math problem.’ ”

Even as many lower-income students are losing out, research suggests they may benefit the most from arts education. “Our research has



AFP/Getty Images/Mandel Ngan

*Grammy award-winning musicians Sharon Isbin and Joshua Bell perform during a student music workshop at the White House on Nov. 4, 2009. The event is a part of a series created by first lady Michelle Obama to highlight arts education. In 2011, the President’s Committee on the Arts and the Humanities released the federal government’s first substantive examination of arts education in more than a decade; it argued that every school should offer an arts-rich environment.*

shown that the arts can be most helpful to those children, and we see their opportunity to participate in arts education is limited,” says Ruppert. “Kids who are struggling in reading and in mathematics and in persistence and attendance, the beneficial effects of arts education are greater for those children.” Studies have shown that the arts especially help students who feel isolated or marginalized, in part by better engaging them with school. A U.S. Department of Justice study found the arts reduced delinquency and drug use and increased self-esteem.<sup>41</sup>

Teachers and administrators who are committed to the arts are finding ways to mitigate the inequities.

At Mount Rainier, principal Reed is not able to hire arts specialists, but she’s doing what she can to bring the arts to her students — 90 percent of whom are eligible for the free or reduced-cost lunch program and over half are immigrants. School walls are painted with bright primary colors rather than institutional beige (“I got in trouble for that,” says Reed) and hung with murals and pictures made by the children, including sophisticated botanical drawings of seed pods that older students made. The school choir and a “Mad Hot Ballroom” dancing group compete with other schools. Visiting artists, from poets to dancers and puppeteers, regularly come to the school to perform and to offer professional development sessions for classroom teachers.

Without the arts, says Reed, “We’re not allowing children the broad spectrum of opportunities they need.”

## 21st-Century Workforce

As the United States seeks to remain globally competitive, arts education advocates, business leaders and policymakers are looking to arts education as a vehicle for fostering creativity and innovation in tomorrow’s workforce.

The National Endowment for the Arts is leading a task force of 13 federal agencies and departments to encourage more and better research on how the arts help people reach their full potential at all stages of life, including in school and on the job.

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“A lot of people for quite a while have devalued the real benefits of arts education,” says O’Brien of NEA. “It’s not just a fun activity or something you’d like to give to your kids if you could, but it has a real function in learning that has real consequences in industry and our economy.”

A survey of *Fortune* 500 companies found that 400 companies were using “arts-based learning” in workforce development.<sup>42</sup> For example, jazz saxophonist Michael Gold uses jazz improvisation to teach business improvisation and collaboration.<sup>43</sup>

Daniel Windham, director of the arts for the New York City-based Wallace Foundation, which supports research on arts education, says education reform should be shaped with the ultimate goal in mind. “If we want children as they approach adulthood to be able to think expressively and creatively and have experience in creative domains and innovation — not only in the industrial model but in a broader way of thinking — if we want them to be successful in the workplace, looking for new ways of solving problems,” he says, “then the 12 years that you have them in schools need to prepare them for those outcomes.” The arts, he says, are fundamental to that goal.

A leader in this effort is the Partnership for 21st Century Skills, founded in 2002 by the U.S. Department of Education, the National Education Association — a major teacher’s union — and large corporations. Its leadership today includes Ford, Apple, Dell, Crayola, Verizon and LEGO Education, among many others.

The partnership seeks to serve as a catalyst for school systems to transform what and how they teach. It wants to “fuse” the traditional core subjects listed in No Child Left Behind (which includes the arts) with what it calls “the 4Cs:” critical thinking and problem solving; communication; collaboration, and creativity and innovation.

In a public opinion poll the partnership commissioned in 2007, a wide majority (88 percent) of respondents thought these skills should be part of the curriculum for all students. While the public supported reading as its top priority, “voter attitudes clearly have shifted away from the ‘back to basics’ movement that was a strong theme for school improvement during the 1990s.”<sup>44</sup>

Arts educators see “the 4Cs” as a golden opportunity to elevate the arts in the eyes of school systems and the public. Adams, the supervisor of fine arts in Montgomery County, Md., says her school system’s new curriculum is based on these 21st-century skills. “They understand that the arts are important,” she says, and that through the arts “the learning is going to be deeper.”

“At a national policy level, it would be a missed opportunity to not place the arts in the center” of 21st-century skills,” says Rohit Burman, program director for the MetLife Foundation, which supports arts programs for young people. “What better way for a teenager to think of connections, to think of different ways to present information than to be on stage or to think about the music. There are so many different pieces where arts can play a role in creative thinking.”

The Conference Board, a business membership and research organization, is conducting a series of studies to learn more about how — or if — arts education nurtures creative workers. In 2008, it partnered with Americans for the Arts and the American Association of School Superintendents to survey business executives and school superintendents. They found a disconnect between the two groups.

Most superintendents thought graduating students met or exceeded all 11 skills or behaviors identified as being linked to creativity; most business executives thought new employees met or exceeded only seven. At the same time, executives ranked the ability to identify problems as the most impor-

tant skill, while superintendents ranked it ninth. Superintendents ranked problem solving as No. 1, while executives ranked it eighth.

“These discrepancies bolster the view that while schools teach students how to solve problems put before them, the business sector requires workers who can identify the problems in the first place,” a report on the study stated.<sup>45</sup>

Mary Wright, program director for human capital with the Conference Board, says the business group’s next step will be to ask executives to look at their most creative, innovative employees: Are there commonalities in their education, such as a strong background in the arts? “We do not have empirical evidence that says, ‘Gee, as I look at my 15 most creative people, these are the classes that they have taken.’ That is what we are hoping to do,” she says. She expects that research to be conducted next year. ■

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## OUTLOOK

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### ‘Schizophrenic’ Future?

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Research on the value of arts education will likely accelerate, if funding can be found. But that’s a big if.

“I think we’re at the infancy stage,” Sabol of the National Art Education Association says of such research. “Neuroscience as a field is making remarkable strides. They’re still exploring the brain. We don’t understand how certain things happen. As advances occur, we’ll be able to make firm connections, we’ll see areas of the brain light up during engagement with art.”

Also on the horizon is a fifth form of art — media arts — which may soon be included under the arts education umbrella. Media arts encompass all sorts of technology applications,

whether for Web design, animation, software graphics, sound engineering, film or communications.

“The use of technology for self-expression has its own design considerations and equipment,” says Sabol. “It’s gone through remarkable growth and development in the last decade and has just ballooned.”

The emphasis on school accountability is not likely to wane. The major arts associations are collaborating to update the national standards published in 1994. They also are working with the Partnership for 21st Century Skills to explain how the arts contribute to critical thinking and problem solving, communication, collaboration and creativity and innovation.

The Internet helps school systems and arts associations quickly, widely and inexpensively disseminate successful programs. “There are many wonderful models on which to draw,” says Tuttle of Arizona. She anticipates a growing emphasis on teacher evaluation and a challenge to arts educators to develop assessment measures for student progress in the arts, as a complement to the testing of reading and math.

Ruppert of the Arts Education Partnership feels “schizophrenic” about the future. On the one hand, state budgets may continue to face the ax, threat-

ening arts programs. “But,” she says, “I’m feeling optimistic because I do believe there is a lot of persuasive evidence we’re gathering for the difference learning through the arts can make in the lives of children.”

The push for more research, better assessment, standards and accountability will likely intensify in education generally, and the arts need to find their place in order to be taken seriously, experts say.

“From a policy point of view, as you allocate dollars in a fiscally conservative environment, you have to make smart decisions,” says Iyengar of NEA. “Just like any other social service or activity, we need to have the information that arts matter to the community and show its worth.” ■

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## About the Author



**Beth Baker** is an award-winning freelance journalist in Takoma Park, Md., who writes on the arts and health care and whose articles have appeared in numerous publications, including *The Washington Post*, *AARP Bulletin*, *Ms.* and *BioScience*, where she is features editor. She has received two National Mature Media Awards for her reporting on aging and media fellowships to study aging and cancer issues from, respectively, Case Western Reserve University and the National Press Foundation. Her books include *Old Age in a New Age — The Promise of Transformative Nursing Homes* (Vanderbilt University Press, 2007).

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## FOR MORE INFORMATION

**American Alliance for Theatre and Education**, 4908 Auburn Ave., Bethesda, MD 20814; 301-200-1944; [www.aate.com](http://www.aate.com). Connects theater artists, educators and researchers. Offers advocacy toolkit and the scholarly *Youth Theatre Journal*. Website summarizes benefits of arts education for student achievement.

**Americans for the Arts**, 1000 Vermont Ave., N.W., 6th Fl., Washington, DC 20005; 202-371-2830; or One E. 53rd St., New York, NY 10022; 212-223-2787; [www.artsusa.org](http://www.artsusa.org). Website provides a wealth of information on the arts and arts education, including research, webinar series, news and professional development and ways to get involved.

**Arts Education Partnership**, One Massachusetts Ave., N.W., Suite 700, Washington, DC 20001-1431; 202-326-8693; [www.aep-arts.org](http://www.aep-arts.org). Provides access to 25-plus publications, most free or at nominal cost, plus a searchable database of arts education state policies and report cards.

**Educational Theatre Association**, 2343 Auburn Ave., Cincinnati, OH 45219-2815; 513-421-3900; <http://schooltheatre.org>. Offers professional development and advocacy for theater teachers, *Dramatics* magazine and a national theater festival for high school students. Website has research, state resources and news.

**National Art Education Association**, 1806 Robert Fulton Dr., Suite 300, Reston, VA 20191; 703-860-8000; [www.arteducators.org](http://www.arteducators.org). Advances visual arts in schools. In addition to professional-development resources, website offers downloadable research reports on benefits of arts education.

**National Association for Music Education**, 1806 Robert Fulton Dr., Suite 300, Reston, VA 20191; 703-860-4000 or 800-336-3768; [www.nafme.org](http://www.nafme.org). Largest and oldest arts education association; provides information on programs and scholarships for students and fact sheets on benefits of music education. Includes ordering information for a sing-along linking students around the globe in a huge virtual concert.

**National Endowment for the Arts**, 1100 Pennsylvania Ave., N.W., Washington, DC 20506-0001; 202-682-5400, [www.nea.gov](http://www.nea.gov). Arts Education section of the website provides several reports free for download, on topics such as research, programs for juvenile offenders, after-school programs and introducing children to the arts.

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A cognitive psychologist and former Harvard researcher makes a compelling case for why arts education is important.

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The former executive director (Deasy) and a senior researcher (Stevenson) with the Arts Education Partnership profile 10 schools in low-income neighborhoods that used arts education to transform themselves into great schools.

Donahue, David M., and Jennifer Stuart, eds., *Artful Teaching — Integrating the Arts for Understanding Across the Curriculum, K-8*, Teachers College Press and National Art Education Association, 2010.

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# The Next Step:

## *Additional Articles from Current Periodicals*

### **Academic Performance**

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Arts can have a tremendous impact on children's ability to do well in school, says the chairman of the Allentown Art Museum in Pennsylvania.

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Arts education benefits academic achievement largely because it gives students motivation, confidence and a better understanding of teamwork, says a school superintendent.

**Strauss, Valerie, "The Problem With Linking Arts Education to Test Scores,"** *The Washington Post*, May 30, 2011, p. B2.

Critics say linking arts education to higher test scores undermines the importance of creativity in student development.

### **Funding**

**Evans, Tim, "Arts Program Struggles to Fund the Gift of Expression, Creativity,"** *USA Today*, Nov. 29, 2011, p. D6, [www.usatoday.com/news/nation/story/2011-11-21/sharing-indiana-disabled-art-program/51446368/1](http://www.usatoday.com/news/nation/story/2011-11-21/sharing-indiana-disabled-art-program/51446368/1).

Staff members of VSA Indiana, which provides arts programs to the disabled, have taken pay reductions in order to avoid major service cuts.

**Hiaasen, Scott, and Kathleen McGrory, "Miami-Dade School District to Restore Funds to Charter School,"** *The Miami Herald*, Nov. 4, 2011, [www.miamiherald.com/2011/11/04/2487712/miami-dade-school-district-to.html](http://www.miamiherald.com/2011/11/04/2487712/miami-dade-school-district-to.html).

A Florida school district has decided to partially restore funds for a charter school devoted to arts education.

**Seidman, Carrie, "A Boost to Arts in Sarasota,"** *Sarasota (Fla.) Herald Tribune*, June 16, 2011, p. A1.

The Kennedy Center in Washington, D.C., has chosen Sarasota, Fla., for a program aimed at expanding arts education in elementary and middle schools.

**Wereschagin, Mike, "Endangered Arts Have Powerful Advocate in Pa.,"** *Pittsburgh Tribune Review*, June 17, 2011, [www.pittsburghlive.com/x/pittsburghtrib/news/state/s\\_742542.html](http://www.pittsburghlive.com/x/pittsburghtrib/news/state/s_742542.html).

Susan Corbett, wife of Republican Pennsylvania Gov. Tom Corbett, wants more funding for the state's arts council.

### **Learning Disabilities**

**Pollak, Suzanne, "Special School for Special Students,"** *Washington Jewish Week*, Jan. 19, 2012, p. B9.

The Diener School in Potomac, Md., emphasizes arts education as a means to overcome learning disabilities for children from K-fifth grade.

**Putterman, Rebecca, "Parents With ADHD Children Support Each Other,"** *Clayton (N.C.) News-Star*, Feb. 5, 2012, [www.claytonnewsstar.com/2012/02/05/1831482/parents-with-adhd-children-support.html](http://www.claytonnewsstar.com/2012/02/05/1831482/parents-with-adhd-children-support.html).

A group of parents with ADHD-diagnosed children in Clayton, N.C., are turning to art therapy to keep their children's hyperactive minds focused.

### **STEAM**

**Genellie, Kate, "A Pair of Reshaped Schools Reopen in Benton Harbor,"** *Herald-Palladium* (St. Joseph, Mich.), Aug. 19, 2011.

A Michigan school district has opened two magnet schools that will focus on the STEAM education method, which incorporates arts with Science, Technology, Engineering and Math.

**Whitlow, Joan, "So Many New High School Choices, So Much Confusion,"** *Star-Ledger* (Newark, N.J.), May 13, 2011, p. 15, [blog.nj.com/njv\\_joan\\_whitlow/2011/05/so\\_many\\_new\\_high\\_school\\_choice.html](http://blog.nj.com/njv_joan_whitlow/2011/05/so_many_new_high_school_choice.html).

The Newark STEAM Academy in New Jersey is designed to offer nontraditional curricula for families wanting a different approach to education.

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